



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/382,438

08/25/1999

WILLIAM R. GARDNER

990482

5232

23696 7590 04/10/2008  
QUALCOMM INCORPORATED  
5775 MOREHOUSE DR.  
SAN DIEGO, CA 92121

EXAMINER

RYMAN, DANIEL J

ART UNIT

PAPER NUMBER

2616

NOTIFICATION DATE

DELIVERY MODE

04/10/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

us-docketing@qualcomm.com  
kascanla@qualcomm.com  
nanm@qualcomm.com

<b>Office Action Summary</b>	<b>Application No.</b> 09/382,438	<b>Applicant(s)</b> GARDNER ET AL.	
	<b>Examiner</b> DANIEL J. RYMAN	<b>Art Unit</b> 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114.

Applicant's submission filed on 28 January 2008 has been entered.

2. The indicated allowability of claims 10-30 is withdrawn in view of the newly discovered reference(s) to Wang et al. (USPN 6,606,311). Rejections based on the newly cited reference(s) follow.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 38 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for those structures associated with the means in the claim, does not reasonably provide enablement for all other conceivable structures for achieving the stated function. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. This claim is a single means claim, and therefore it is rejected as being unduly broad.

See MPEP § 2164.08(a).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 10-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Nee (USPN 6,175,550), of record, in view of Hara et al. (Shinsuke Hara & Ramjee Prasad, *Overview of Multicarrier CDMA*, IEEE Comm. Mag., Dec. 1997, at 126), of record, in further view of Applicant's Admitted Prior Art in further view of Kuo (USPN 6,810,030), of record, in further view of Wang et al. (USPN 6,606,311).

7. Regarding claims 10, 17, and 20, van Nee discloses a method and apparatus in a wireless communication system, the method comprising the steps of and the apparatus comprising means for: designating a multi-carrier forward link having a plurality of forward link frequency bins (col. 2, lines 14-17, where "base stations transmit at all carriers simultaneously" implies the use of multiple carriers on the forward link, and where carriers are also known as "bins," see col. 1, lines 17-20); and designating a reverse link having at least one reverse link frequency bin (col. 2, lines 11-17, where "allocating only a fraction of the total number of carriers to each mobile" implies the use of at least one reverse link carrier, and where carriers are also known as "bins," see col. 1, lines 17-20), wherein the forward link frequency bins and the at least one reverse link frequency bin are designated such that bandwidth of the forward link is allocated differently from bandwidth of the reverse link (col. 2, lines 11-21 and col. 8, lines 40-67, where different

data rates are allocated on the forward link as compared to the reverse link by allocating different numbers of carriers on the forward and reverse links).

Van Nee does not expressly disclose that the forward link frequency bins and the at least one reverse link frequency bin comprise signals obtained by code spreading. Rather van Nee discloses that the signals are transmitted using OFDM. Hara teaches that “in 1993, . . . three types of new multiple access schemes based on the combination of code division and OFDM techniques were proposed” (p. 126, 1<sup>st</sup> column), where “the combination of OFDM signaling and CDMA scheme has one major advantage that it can lower the symbol rate in each subcarrier so that a longer symbol duration makes it easier to quasi-synchronize the transmissions” (p. 127, 1<sup>st</sup> column). In each of these schemes, the frequency bins comprise signals obtained by code spreading (p. 127, 1<sup>st</sup> column, where one group of MC-CDMA, the frequency domain group, “spreads the original data stream using a given spreading code, and then modulates a different subcarrier with each chip,” while the other group of MC-CDMA, the time domain group, “spreads the serial-to-parallel (S/P) converted data streams using a given spreading code, and then modulates a different subcarrier with each of the data stream”). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the forward link frequency bins and the at least one reverse link frequency bin of van Nee comprise signals obtained by code spreading, as outlined in Hara, since this results in a lower symbol rate in each subcarrier so that a longer symbol duration makes it easier to quasi-synchronize the transmissions.

Van Nee does not expressly disclose that the code spreading occurs in the time domain. As outlined above, Hara discloses that MC-CDMA is divided into two groups, one which

spreads in the time domain and the other which spreads in the frequency domain (p. 127, 1<sup>st</sup> column, where one group of MC-CDMA, the frequency domain group, “spreads the original data stream using a given spreading code, and then modulates a different subcarrier with each chip,” while the other group of MC-CDMA, the time domain group, “spreads the serial-to-parallel (S/P) converted data streams using a given spreading code, and then modulates a different subcarrier with each of the data stream”). Hara further discloses that frequency domain spreading MC-CDMA has problems maintaining orthogonality on its uplink channels (p. 131, 1<sup>st</sup> column, where “[m]ulti-user detection [MUD] techniques are necessary for the MC-CDMA uplink channel . . . , because the orthogonality among users is totally distorted) and in channels that experience selective fading (p. 129, 1<sup>st</sup> column, where “through a frequency selective fading channel, all the subcarriers have different amplitude levels and different phase shifts, . . . which results in the distortion of the orthogonality among users”). Thus, Hara suggests that MC-CDMA requires some sort of correction in the receiver (p. 131, 1<sup>st</sup> column, where Hara suggests using multi-user detection to correct for lack of orthogonality), where such correction is complex (e.g. p. 131, 1<sup>st</sup> column, where the only MUD technique disclosed that is applicable for both uplink and downlink channels has “complexity” that “grows exponentially as the number of users increases”). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the code spreading in the time domain since code spreading in the time domain occurs in the group of MC-CDMA that does not experience orthogonality problems, such that time-domain spreading MC-CDMA receivers are less complex than frequency-domain spreading MC-CDMA receivers.

Van Nee in view of Hara does not expressly disclose allocating each of the forward link bins and the at least one reverse link frequency bin for single-carrier CDMA communication within the respective bin. Applicant teaches as prior art that cdma2000 3X links are well known in the art since cdma2000 expands “the capabilities of the preceding technologies to include wireless e-mail, Web browsing, and corporate and local network access, as well as videoconferencing, e-commerce and multimedia” (page 4, lines 1-14). In addition, Applicant teaches that “[b]y using the 3X FDD mode and providing a forward link using the multi-carrier format, a communications system is fully compatible with existing IS-95 system” (pg. 5, lines 6-8). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to allocate each of the forward link bins and the at least one reverse link frequency bin for single-carrier CDMA communication within the respective bin in order to have a communications system that expands current technologies, but that is fully compatible with existing IS-95 system.

Van Nee in view of Hara in further view of Applicant’s admitted prior art does not expressly disclose that the designation of the reverse link is responsive to loading. Kuo teaches, in a multi-carrier CDMA system (col. 2, lines 59-63), allocating a reverse link in response to loading (col. 2, lines 25-30, where “[b]ased on carrier utilization [i.e. loading]/interference level, carrier assignments are allocated on an unequal basis,” see also col. 5, lines 61-64). Kuo does this “to achieve the goal of maximum utilization of potential capacity by equalizing the loading and interference across the carriers” (col. 4, lines 24-28). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to designate a reverse link responsive to loading, as suggested by Kuo, in the system of Van Nee in view of Hara in further

view of Applicant's admitted prior art since this will maximize utilization of potential capacity by equalizing loading across the carriers.

Van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo does not expressly disclose allocating the plurality of forward link frequency bins to carry different types of payload data. Wang teaches, in a CDMA system using multiple carriers (col. 2, lines 32-45, where cdma2000 is a multi-carrier system), determining the quality of service (QoS) requirements of a given information stream (col. 4, lines 36-41) and then forwarding the information stream over an assigned set of physical channels having the QoS capabilities required by the information stream (col. 4, lines 47-52, see also col. 5, lines 27-32), where it is implicit that each carrier in the multi-carrier system constitutes a set of physical channels having particular QoS capabilities. Wang does this in order to have a system that supports multiple defined QoS classes (col. 3, lines 10-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to allocate the plurality of forward link frequency bins of van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo to carry different types of payload data, as outlined in Wang, in order to have a system that supports multiple defined QoS classes.

8. Regarding claims 11 and 21, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang discloses selecting a first forward link frequency bin from the plurality of forward link frequency bins for forward link transmission, the first forward link frequency bin having an associated first reverse link frequency bin (van Nee: col. 8, lines 20-40, where the base station communicates with a mobile over the forward link and the mobile units communicate with the base over reverse links, and

Art Unit: 2616

where, as broadly defined, a forward link used to communicate with a mobile unit and the reverse link used by that mobile unit to communicate with the base are “associated” since both links are tied to the same “conversation” between a base and mobile); and selecting a second reverse link frequency bin for reverse link transmission corresponding to the forward link transmission wherein the second reverse link frequency bin is different from the first reverse link frequency bin (van Nee: col. 8, lines 20-47, where asymmetric data rates are accomplished by varying the carriers for the forward and reverse links, such that a single mobile has a plurality carriers on the reverse link).

9. Regarding claim 12, van Nee in view of Hara in further view of Applicant’s admitted prior art in further view of Kuo in further view of Wang discloses that the selecting a second reverse link frequency bin is based on loading of the system (van Nee: where signal rates are increased until the point that system quality degrades, i.e. the system is loaded, col. 7, line 40-col. 8, line 1, and where rates are increased by adding further carriers, col. 8, lines 41-47).

10. Regarding claim 13, van Nee in view of Hara in further view of Applicant’s admitted prior art in further view of Kuo in further view of Wang discloses selecting a third reverse link frequency bin for reverse link transmission corresponding to the forward link transmission, wherein the third reverse link frequency bin is different from the first and second reverse link frequency bins (van Nee: col. 8, lines 20-47, where asymmetric data rates are accomplished by varying the carriers for the forward and reverse links, such that a single mobile has a plurality carriers on the reverse link, see e.g. col. 8, lines 20-27, where the mobiles transmit over 4 carriers).

Art Unit: 2616

11. Regarding claim 14, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang suggests that said plurality of forward link frequency bins comprise three frequency bins (Applicant: pg. 4, line 22-pg. 5, line 1).

12. Regarding claim 15, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang does not disclose in van Nee's main embodiment that the plurality of bins are adjacent frequency bins; however, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang does disclose in one embodiment that the plurality of bins are adjacent frequency bins (van Nee: Fig. 3; col. 6, lines 4-9; and col. 6, lines 47-59). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have said plurality of forward link frequency bins be adjacent frequency bins since this is disclosed in an embodiment in the system.

13. Regarding claim 16, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang discloses that said multi-carrier forward link is adapted for transmission of a plurality of code channels (Hara: p. 127, 1<sup>st</sup> column, where there are a plurality of coded channels). Van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang suggests that one of said plurality of code channels is used to communicate power control information for said second reverse link frequency bin (van Nee: col. 9, lines 9-16, where the base communicates power control information, and where, as outlined previously, communication between base and mobile occurs over coded channels, such that one of the plurality of coded channels would be used to communicate power control information for the second reverse link frequency bin).

Art Unit: 2616

14. Regarding claim 18, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang discloses receiving by a first device a communication on a forward link frequency bin, the forward link frequency bin having an associated first reverse link frequency bin (van Nee: col. 8, lines 20-40, where the base station communicates with a mobile over the forward link and the mobile units communicate with the base over reverse links, and where, as broadly defined, a forward link used to communicate with a mobile unit and the reverse link used by that mobile unit to communicate with the base are "associated" since both links are tied to the same "conversation" between a base and mobile); and transmitting by a second device via a second reverse link frequency bin, wherein said second reverse link frequency bin is different from the first reverse link frequency bin (van Nee: col. 8, lines 20-30, where different mobile units communicate with the base station using different reverse link carriers).

15. Regarding claim 19, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang inherently discloses receiving by the first device an indication of a reverse link frequency bin (van Nee: col. 8, lines 20-67, where a base station and a mobile station must agree on a reverse link frequency bin in order to establish communication over a reverse link frequency bin).

16. Regarding claim 22, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang discloses that the designations of the forward and reverse link includes allocating more bandwidth for the forward link than the reverse link (van Nee: col. 8, lines 41-47, where an asymmetric link for "downloading data" implies that the forward link has a greater bandwidth than the reverse link).

17. Regarding claim 23, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang discloses that the designation of the forward link includes configuring the forward link as a cdma2000 3X forward link (Applicant: page 4, lines 1-page 6, line 8, where cdma2000 3X is a well-known CDMA multi-carrier system).

18. Regarding claim 24, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang discloses that the forward link includes first, second, and third carriers (Applicant: page 4, lines 1-page 6, line 8, where cdma2000 3X includes three carriers on the forward link).

19. Regarding claim 25, incorporating the rejection of claim 15, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang discloses that said first, second, and third carriers occupy first, second, and third adjacent frequency bins, respectively (van Nee: Fig. 3; col. 6, lines 4-9; and col. 6, lines 47-59, where the frequency bins are adjacent, and Applicant: page 4, lines 1-page 6, line 8, where there cdma2000 has three carriers).

20. Regarding claim 26, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang suggests that the designation of the reverse link includes configuring the reverse link as a cdma2000 1X reverse link. Van Nee discloses that the reverse link may be configured in a different manner than the forward link in order to support asymmetric data rates (van Nee: col. 8, lines 40-47). Applicant teaches as prior art that the 1X reverse link has a lower data rate compared to a 3X forward link (Applicant: page 4, lines 16-page 5, line 4). Therefore, it would have been obvious to one of ordinary skill in the

art at the time of the invention to have the designation of the reverse link include configuring the reverse link as a cdma2000 1X reverse link in order to have asymmetric data rates.

21. Regarding claim 27, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang discloses that the reverse link includes a fourth carrier (van Nee: col. 8, lines 20-30, where it is disclosed that a remote station transmits using four carriers).

22. Regarding claim 28, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang does not expressly disclose that the fourth carrier is located in a frequency range similar to the second frequency bin; however, Van Nee does disclose that the reverse link may be configured in a different manner than the forward link in order to support asymmetric data rates (van Nee: col. 8, lines 20-47). Applicant teaches as prior art having the reverse and forward frequency ranges overlap (Applicant: page 5, lines 12-28, where TDD allows a forward link and a reverse link to be communicated over the same frequency band). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to locate the fourth carrier in a frequency range similar to the second frequency bin, in order to permit the forward link and the reverse link to be communicated over the same frequency band.

23. Regarding claim 29, incorporating the rejection of claim 10, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang discloses each limitation of claim 29, as outlined in the rejection of claim 10, except that a subset of the reverse link frequency bins are time-division-duplexed. Applicant admits as prior art that time division duplexing is well known in the art since it allows both the forward link and the

Art Unit: 2616

reverse link to be transmitted in a single band (page 5, lines 12-18). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a subset of the reverse link frequency bins be time-division-duplexed in order to allow both the forward link and the reverse link to be transmitted in a single band.

24. Regarding claim 30, van Nee in view of Hara in further view of Applicant's admitted prior art in further view of Kuo in further view of Wang discloses that the forward link data is allocated to each of the forward link frequency bins depending on a data type of the forward link data (Wang: col. 4, lines 36-52).

25. Claims 31-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Nee (USPN 6,175,550), of record, in view of Kuo (USPN 6,810,030), of record, in further view of Wang et al. (USPN 6,606,311).

26. Regarding claims 31, 36, and 41, van Nee discloses a method and apparatus in a wireless communication system, the method comprising the steps of and the apparatus comprising means for: designating a multi-carrier forward link having a plurality of forward link frequency bins (col. 2, lines 14-17, where "base stations transmit at all carriers simultaneously" implies the use of multiple carriers on the forward link, and where carriers are also known as "bins," see col. 1, lines 17-20); and designating a reverse link having at least one reverse link frequency bin (col. 2, lines 11-17, where "allocating only a fraction of the total number of carriers to each mobile" implies the use of at least one reverse link carrier, and where carriers are also known as "bins," see col. 1, lines 17-20), wherein the forward link frequency bins and the at least one reverse link frequency bin are designated such that bandwidth of the forward link is allocated differently from bandwidth of the reverse link (col. 2, lines 11-21 and col. 8, lines 40-67, where different

data rates are allocated on the forward link as compared to the reverse link by allocating different numbers of carriers on the forward and reverse links).

Van Nee does not expressly disclose that the designation of the reverse link is responsive to loading. Kuo teaches, in a multi-carrier CDMA system (col. 2, lines 59-63), allocating a reverse link in response to loading (col. 2, lines 25-30, where “[b]ased on carrier utilization [i.e. loading]/interference level, carrier assignments are allocated on an unequal basis,” see also col. 5, lines 61-64). Kuo does this “to achieve the goal of maximum utilization of potential capacity by equalizing the loading and interference across the carriers” (col. 4, lines 24-28). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to designate a reverse link responsive to loading, as suggested by Kuo, in the system of Van Nee since this will maximize utilization of potential capacity by equalizing loading across the carriers.

Van Nee in view of Kuo does not expressly disclose allocating the plurality of forward link frequency bins to carry different types of payload data. Wang teaches, in a CDMA system using multiple carriers (col. 2, lines 32-45, where cdma2000 is a multi-carrier system), determining the quality of service (QoS) requirements of a given information stream (col. 4, lines 36-41) and then forwarding the information stream over an assigned set of physical channels having the QoS capabilities required by the information stream (col. 4, lines 47-52, see also col. 5, lines 27-32), where it is implicit that each carrier in the multi-carrier system constitutes a set of physical channels having particular QoS capabilities. Wang does this in order to have a system that supports multiple defined QoS classes (col. 3, lines 10-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to allocate the plurality of

Art Unit: 2616

forward link frequency bins of van Nee in view of Kuo to carry different types of payload data, as outlined in Wang, in order to have a system that supports multiple defined QoS classes.

27. Regarding claims 32, 37, and 42, van Nee in view of Kuo in further view of Wang discloses selecting a first forward link frequency bin from the plurality of forward link frequency bins for forward link transmission, the first forward link frequency bin having an associated first reverse link frequency bin (van Nee: col. 8, lines 20-40, where the base station communicates with a mobile over the forward link and the mobile units communicate with the base over reverse links, and where, as broadly defined, a forward link used to communicate with a mobile unit and the reverse link used by that mobile unit to communicate with the base are “associated” since both links are tied to the same “conversation” between a base and mobile); and selecting a second reverse link frequency bin for reverse link transmission corresponding to the forward link transmission wherein the second reverse link frequency bin is different from the first reverse link frequency bin (van Nee: col. 8, lines 20-47, where asymmetric data rates are accomplished by varying the carriers for the forward and reverse links, such that a single mobile has a plurality carriers on the reverse link).

28. Regarding claims 33, 38, and 43, van Nee discloses a method and apparatus in a wireless communication system, the method comprising the steps of and the apparatus comprising means for: receiving communications on a multi-carrier forward link, the multi-carrier forward link having a plurality of forward link frequency bins allocated to carry data (col. 2, lines 14-17, where mobiles receive signals that have been transmitted by base stations over a multiple carrier forward link, and where carriers are also known as “bins,” see col. 1, lines 17-20), the reverse link having at least one frequency bin (col. 2, lines 11-17, where “allocating only a fraction of

Art Unit: 2616

the total number of carriers to each mobile” implies the use of at least one reverse link carrier, and where carriers are also known as “bins,” see col. 1, lines 17-20); wherein the forward link bins and the at least one reverse link frequency bins are configured such that the allocation of bandwidth for the forward and reverse link transmissions can be varied (col. 2, lines 11-21 and col. 8, lines 40-67, where different data rates are allocated on the forward link as compared to the reverse link by allocating different numbers of carriers on the forward and reverse links).

Van Nee does not expressly disclose selecting at least one frequency bin of the reverse link responsive to loading. Kuo teaches, in a multi-carrier CDMA system (col. 2, lines 59-63), allocating a reverse link in response to loading (col. 2, lines 25-30, where “[b]ased on carrier utilization [i.e. loading]/interference level, carrier assignments are allocated on an unequal basis,” see also col. 5, lines 61-64). Kuo does this “to achieve the goal of maximum utilization of potential capacity by equalizing the loading and interference across the carriers” (col. 4, lines 24-28). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to designate a reverse link responsive to loading, as suggested by Kuo, in the system of Van Nee since this will maximize utilization of potential capacity by equalizing loading across the carriers.

Van Nee in view of Kuo does not expressly disclose allocating the plurality of forward link frequency bins to carry different types of payload data. Wang teaches, in a CDMA system using multiple carriers (col. 2, lines 32-45, where cdma2000 is a multi-carrier system), determining the quality of service (QoS) requirements of a given information stream (col. 4, lines 36-41) and then forwarding the information stream over an assigned set of physical channels having the QoS capabilities required by the information stream (col. 4, lines 47-52, see also col.

Art Unit: 2616

5, lines 27-32), where it is implicit that each carrier in the multi-carrier system constitutes a set of physical channels having particular QoS capabilities. Wang does this in order to have a system that supports multiple defined QoS classes (col. 3, lines 10-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to allocate the plurality of forward link frequency bins of van Nee in view of Kuo to carry different types of payload data, as outlined in Wang, in order to have a system that supports multiple defined QoS classes.

29. Regarding claims 34, 39, and 44, van Nee in view of Kuo in further view of Wang discloses transmitting communications over the at least one frequency bin of the reverse link (van Nee: col. 2, lines 11-17, where “allocating only a fraction of the total number of carriers to each mobile” implies the use of at least one reverse link carrier, and where carriers are also known as “bins,” see col. 1, lines 17-20).

30. Regarding claims 35, 40, and 45, van Nee in view of Kuo in further view of Wang discloses receiving an indication of a reverse link frequency bin (van Nee: col. 8, lines 20-67, where a base station and a mobile station must agree on a reverse link frequency bin in order to establish communication over a reverse link frequency bin).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL J. RYMAN whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Daniel J. Ryman  
Primary Examiner  
Art Unit 2616

/Daniel J. Ryman/  
Primary Examiner, Art Unit 2616